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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,103

02/04/2005

Jean Beguinot

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,103	<b>Applicant(s)</b> BEGUINOT, JEAN	
	<b>Examiner</b> JIE YANG	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/22/2008 has been entered.

### ***Status of the Claims***

Claims 12-15 have been added as new claims, claims 1, 4, 8, and 9 have been amended from original claim, and claims 1-15 are pending in application.

### ***Status of the Previous Rejections***

Previous rejections of claims 1-10 under 35 U.S.C. 103(a) as obvious over Ichikawa et al (JP 8-165542, thereafter JP'542, based on English translation) in view of Jean et al (US 5,714,116, thereafter US'116) and Jiro et al (US 5,639,421, thereafter US'421) are withdrawn in view of the applicants amendment to the claims. However, upon further consideration, a new ground(s) of rejection is made as address following.

Previous rejections of claim 11 under 35 U.S.C. 103(a) as being unpatentable over under 35 U.S.C. 103(a) as being unpatentable over JP'542 in view of US'116 and US'421 as applied claims 1-10 and in further view of Lars-Ake et al (US 6,048,491, thereafter US'491) is withdrawn in view of the applicants amendment to the claims. However, upon further consideration, a new ground(s) of rejection is made as address following.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (JP 8-165542, thereafter JP'542, based on English translation) in view of Jean et al (US 5,714,116, thereafter US'116) and Bobbert et al (US 5,458,704, thereafter US'704).

Regarding claims 1-10, and 12-15, JP'542 teaches steel with excellent weldability and hardenability for plastic molding application (Abstract). The composition comparison between the instant claims and JP'542 is listed in following table. the composition ranges of JP'542's alloy overlap those recited by the claims 1-10. These overlap encompasses most of range of

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claimed alloy. JP'542 teaches the hardness of the steel can up to 460 HB (abstract and table 1), which is within the claimed hardness range (430HB to 530HB). But JP'542 does not explicitly state that a) the metal-working parts having a thickness of greater than 20 mm, of which the structure is completely martensitic or martensitic-bainitic; b) Si less than 0.15%wt (claim 1); no more than 0.13%wt (claim 12); no more than 0.12%wt (claim 13); no more than 0.1%wt (claim 14); or no more than 0.05%wt (claim 15).

Element	From instant Claims (in wt%)	'J542 claims (in wt%)	Overlapping range (in wt%)
C	0.18-0.4	0.1-0.25	0.1-0.25
Si	less than 0.15 (cl. 1-11); No more than 0.13 (Cl.12); No more than 0.12 (Cl.13); No more than 0.1 (Cl.14); No more than 0.05 (Cl.15)	0.25-0.35	--
Mn	No more than 2.5	1.2-2.2	1.2-2.2
Ni	No more than 3	No more than 2	0-2
Cr	No more than 3.5	1.6-3	1.6-3
Mo+W/2	No more than 2.8	Mo:0.03-2	0.03-2
V+Nb/2+Ta/4	No more than 0.5	V:0.01-0.4	0.01-0.4
Al	No more than 0.4	--	
Ti+Zr/2	No more than 0.1	0.003-0.2	0.003-0.1
B	0.0005-0.015	No more than 0.002	0.0005-0.002
S+ Se +Te (optional)	No more than 0.2	Te:0.01-0.15	0.01-0.15
Pb + Bi (optional)	No more than 0.2	Pb:0.03-0.2 Bi:0.01-0.2	0.01-0.2
Ca (optional)	No more than 0.1	0.0005-0.01	0.0005-0.01
Fe +impurities	Balance	Balance	Balance

Regarding limitation a) US'116 teaches steels for the manufacture of components having high abrasion resistance (abstract). US'116 teaches the steel sheet having a thickness of between 10mm to 100mm (Claims 5, 11, and Col. 4, line 33-38 of US'116). The structure of steel can be adjusted by heat treatments from mixture of martensite and bainite and 5% to 15% of retained carbon-rich austenite (Col.3, Line 55 to 67 of US'116) to an entirely martensitic structure (Col. 5, Line 14 to 17 of US'116). US'116 teaches the alloy with the major composition overlapping the composition as recited in the instant invention (claims 1-14, tables, and summary of invention of US'116), and US'116 also teaches the similar hardness range (Tables and claims 8 and 14 of US'116) and the same applications (Col. 5, Line 29 to 58 of US'116) as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to treat the US'542's alloy with a thickness of greater than 20 mm, of which the structure is completely martensitic or martensite-bainitic as recited in the instant claim as demonstrated in US'116 in order to manufacture the steel articles and components having high abrasion resistance (Abstract of US'116).

Regarding limitation b) US'704 teaches a steel block with composition (Abstract, table 1, claim 1 of US'704) overlapping with the composition of steel as recited in the instant claims. US'704 teaches adding Si from 0.05 to 0.75%wt in the alloy (Abstract and claim 1 of US'491). The Si composition ranges disclosed in US'704 overlap with the composition range recited in the instant claims. Refer to **MPEP 2144.05 I**, the prima facie obviousness is rendered. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Si composition, for instance less 0.15%wt as recited in the instant claim 1-10; no more than 0.13%wt as recited in claim 12; no more than 0.12%wt as recited in claim 13; no more than 0.1%wt as recited in claim 14; or no more than 0.05%wt as recited in claim 15 as demonstrated in US'704 in the JP'542's alloy as taught by US'704 because US'704 teaches the product made by such an alloy has a combination of considerable hardness (above 400HB, more particularly above 430HB) with considerable plate thickness (above 50 mm or 75 mm).

Regarding the equations in claim 1-10, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re

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Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the equations fully depends on alloy's composition; the selection of the proportions of elements, C, Mn, Ni, Cr, Mo, Si, V, W, Nb, Ta, B, Ti, Zr, Al, and N for the calculating factors, Tr, Dr, U, K, Kl, I, I\*, J, and R would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'542, in view of US'116 and US'704, and further in view of Lars-Ake et al (US 6,048,491, thereafter US'491).

Regarding claim 11, which depends on claim 1, JP'542 in view US'116 and US'704 does not explicitly state that at least a portion of the surface is hardened by nitriding and of which the hardness at all points is between 430HB and 530HB. US'491 teaches a steel alloy using for manufacturing of plastic moulding tools (Technical field). "The steel after finished hot working and cooling to room temperature obtains a homogeneous structure through whole piece of steel independent of its physical dimension, said structure consisting of a so called low carbon lath martensite..." (Col.1, Line 65 to Col.2, Line 18 of US'491). US'491 teaches the surface hardenability by various



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surface nitriding techniques: Gas nitriding--510°C; Plasma nitriding--480°C; Nitrocarburizing in gas--580°C; and Nitrocarburizing in salt bath (Tenifer)-- 580°C (Col. 6, Lines 9-45 of US'491). Instant invention does not disclose details for gaseous nitriding process, however it points out: "Finally, (steel) they are tempered at a temperature higher than 500°C, and preferably of at least 550°C, but lower than AC1." (Page 14, line 10 to 20). Because instant invention's tempered-temperature higher than US'491's gas nitriding temperature--510°C, the hardness of the steel will mainly decided by tempered process. Compared with instant invention, US'491 has overlapped composition (abstract, Table 1, claims 1-8 of US'491), US'491 teaches the similar structure (Col. 1, Line 65 to Col. 2, Line 18 of US'491) and the similar applications (Technique field, and Background of the invention, Line 10 to 39 of US'491) as recited in the instant application. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable gaseous nitriding process in the process of JP542 in view US'116 and US'704 as taught by US'491 in order to improve surface micro-hardness and get good surface hardenability and maintain 430 to 530HB body hardness (Col. 6, Line 10 to 45 of US'491).

***Response to Arguments***

Applicant's arguments, see "applicant arguments/remarks", filed 1/2/2008, with respect to objection to the rejections for claims 1-11 under 35 U.S.C. 103(a) have been fully considered and are persuasive in view of the applicants amendment to the claims. However, upon further consideration, a new ground(s) of rejection is made as address above.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Roy King/

Supervisory Patent Examiner, Art Unit 1793